

The role of agronomic research in climate change and food security policy

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Abstract:

Societal concern is growing about the consequences of climate change for food systems and, in a number of regions, for food security. There is also concern that meeting the rising demand for food is leading to environmental degradation thereby exacerbating factors in part responsible for climate change, and further undermining the food systems upon which food security is based. A major emphasis of climate change/food security research over recent years has addressed the agronomic aspects of climate change, and particularly crop yield. This has provided an excellent foundation for assessments of how climate change may affect crop productivity, but the connectivity between these results and the broader issues of food security at large are relatively poorly explored; too often discussions of food security policy appear to be based on a relatively narrow agronomic perspective. To overcome the limitation of current agronomic research outputs there are several scientific challenges where further agronomic effort is necessary, and where agronomic research results can effectively contribute to the broader issues underlying food security. First is the need to better understand how climate change will affect cropping systems including both direct effects on the crops themselves and indirect effects as a result of changed pest and weed dynamics and altered soil and water conditions. Second is the need to assess technical and policy options for either reducing the deleterious impacts or enhancing the benefits of climate change on cropping systems while minimising further environmental degradation. Third is the need to understand how best to address the information needs of policy makers and report and communicate agronomic research results in a manner that will assist the development of food systems adapted to climate change. There are, however, two important considerations regarding these agronomic research contributions to the food security/climate change debate. The first concerns scale. Agronomic research has traditionally been conducted at plot scale over a growing season or perhaps a few years, but many of the issues related to food security operate at larger spatial and temporal scales. Over the last decade, agronomists have begun to establish trials at landscape scale, but there are a number of methodological challenges to be overcome at such scales. The second concerns the position of crop production (which is a primary focus of agronomic research) in the broader context of food security. Production is clearly important, but food distribution and exchange also determine food availability while access to food and food utilisation are other important components of food security. Therefore, while agronomic research alone cannot address all food security/climate change issues (and hence the balance of investment in research and development for crop production vis à vis other aspects of food security needs to be assessed), it will nevertheless continue to have an important role to play: it both improves understanding of the impacts of climate change on crop production and helps to develop adaptation options; and also – and crucially – it improves understanding of the consequences of different adaptation options on further climate forcing. This role can further be strengthened if agronomists work alongside other scientists to develop adaptation options that are not only effective in terms of crop production, but are also environmentally and economically robust, at landscape and regional scales.

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Furthermore, such integrated approaches to adaptation research are much more likely to address the information need of policy makers. The potential for stronger linkages between the results of agronomic research in the context of climate change and the policy environment will thus be enhanced.

Source: Ask your librarian to help locate this item.

Resource Description

Communication: M

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: M

audience to whom the resource is directed

Policymaker, Researcher

Exposure: M

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Security

Food/Water Security: Agricultural Productivity, Food Access/Distribution

Geographic Feature: M

resource focuses on specific type of geography

None or Unspecified

Geographic Location: M

resource focuses on specific location

Global or Unspecified

Health Impact: M

specification of health effect or disease related to climate change exposure

Malnutrition/Undernutrition

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: M

populations at particular risk or vulnerability to climate change impacts

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Low Socioeconomic Status, Workers

Resource Type: **№**

format or standard characteristic of resource

Review

Timescale: M

time period studied

Time Scale Unspecified